Woodward-Clyde Associates

Geotechnical and Water Resources Engineering

Potential Conduits Investigation

Preliminary Report

Jasco Chemical Corporation

Mountain View, California

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Jasco Chemical Corporation

Mountain View, California

Prepared for:

BRONSON, BRONSON, AND MCKINNON

March 1988

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Project JCO-104H

Wahler Associates

Geotechnical and Water Resources Engineering

March 18, 1988
Project JCO-104H

Mr. James L. Jaffe
Bronson, Bronson and McKinnon
Bank of America Center
555 California Street
San Francisco, CA 94101

Dear James,

Enclosed is a copy of our Potential Conduits Investigation Preliminary Report prepared for Jasco Chemical Corporation of Mountain View, California. Please do not hesitate to call if you have any questions regarding the topics discussed in this report.

Sincerely,

WAHLER ASSOCIATES

Robert G. Breynaert
Project Manager

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A. INTRODUCTION

This preliminary report partially satisfies the requirements of California Regional Water Quality Control Board (CRWQCB) Clean-up and Abatement Order (CAO) Number 87-094 issued to Jasco Chemical Corporation on August 3, 1987. CAO No. 87-094 specifies that a potential conduits investigation be performed at and in the vicinity of the Jasco Chemical Corporation facility in Mountain View, California. Please note that this is a preliminary report. A final potential conduits investigation report will be submitted to the CRWQCB no later than May 6, 1988. This preliminary report will be organized into five sections: an introductory section, a section discussing data sources and the preliminary results obtained from each data source, a section which discusses the work in progress, a limitations statement, and a references section.

The following discussion will be confined to potential vertical conduits, i.e. water wells. The results of the potential horizontal conduit search will be presented in the final report.

B. DATA SOURCES AND PRELIMINARY RESULTS

1. Definition of the Conduit Inventory Region

The conduit inventory region (CIR) has been defined as shown on Figure 1. The southern boundary of the CIR is Villa Street. Permanente Creek is the western boundary of the CIR. The eastern boundary of the CIR is Granada Drive (Figure 1). Hackett Avenue is the northern boundary of the CIR. The CIR boundaries were chosen by taking into account the dimensions of the known A-aquifer chemical plume, in combination with recommended boundaries outlined in the February 18, 1988 letter submitted to Mr. James L. Jaffe by Mr. Steven Morse of the CRWQCB.

2. Data Source

Available records from many public and private sources were searched to obtain information on the locations of active, inactive or destroyed wells

located within and in the vicinity of the CIR. A listing of the references used in performance of the preliminary investigation is given in Section D. The majority of the data presented in this preliminary report were gathered at the San Jose offices of the Santa Clara Valley Water District (SCVWD).

3. Santa Clara Valley Water District

The SCVWD provided a great deal of useful information regarding the locations of active, inactive and abandoned water wells located at and in the vicinity of the CIR. A representative of WA visited the SCVWD office on Friday, March 11, 1988. Information obtained from the SCVWD includes a computer printout containing the locations and characteristics of all of the known water wells, not including monitoring wells, located within the CIR. The listing was compiled as part of the South Bay Multi-Site Cooperative Agreement Well Inventory Investigation prepared for the CRWQCB by the SCVWD. This listing will henceforth be referred to as the well inventory data base (WID). A copy of the report prepared to assist in the use of the WID was also obtained. Although the WID was compiled using existing, available SCVWD data sources, computer printouts and copies of the following data bases and publications were obtained to cross-check the accuracy of the WID: requested statistics for registered water producing wells, active and inactive; the SCVWD well locations map for the Mountain View quadrangle; copies of the SCVWD Saltwater Intrusion Investigation reports prepared during October 1980, February 1985, and July 1985. Examination of the Saltwater Intrusion Investigation (SII) reports revealed that the Jasco CIR was not contained within the SII canvass area. In addition to the WID and the additional data sources outlined above, a copy of the monitoring wells search data base for the CIR and surrounding area was obtained. In addition, State DWR Water Well Drillers Reports for all of the monitoring wells located within and in the vicinity of the CIR were obtained from the SCVWD.

Two additional pieces of information examined as part of this investigation, that were obtained from the SCVWD, are the as-built drawings for the improvements to Permanente Creek, and the specifications and contract

documents for the improvement of Permanente Creek, 485 feet south of Villa Street to California Street. No wells or other pertinent information were found from the examination of these two sources. A complete listing of the data sources obtained from or examined while at the SCVWD is contained within Section E. The majority of the useful information obtained from the SCVWD was obtained from the WID and monitoring wells search computer printouts.

The entire CIR is contained within the township and range coordinate area 06S2W21. The WID printout for 06S2W16 was also obtained but not used in this investigation. The monitoring wells search output used in this investigation was also compiled using data from 06S2W21.

The water producing wells found within and in the vicinity of the CIR are shown on Figure 2. Figure 3 shows the locations of monitoring wells found within the CIR. A partial listing of the characteristics of the water producing wells within the CIR is included as Table 1. Table 2 contains the locations and characteristics of the monitoring wells. A full listing of the well characteristics will be included in the final report. A total of five active, inactive and destroyed water producing wells were found within the CIR (Table 1, Figure 2). One of the wells, F01, is Jasco well V-4, located at the northwest boundary of the Jasco site. Two of the wells, G03 and G04 were destroyed in 1966 with the method of destruction unknown. These wells are located adjacent to the eastern border of the CIR, in an area not thought to be affected by the Jasco plume. The additional two wells, D#1 and C#2, were identified by aerial photo interpretation as part of the South Bay Multi-Site Cooperative Agreement Investigation. No other water-producing wells were found in the CIR as listed in the WID. Four wells located adjacent to the western boundary of the CIR are also shown on Figure 2. Three of the wells, C01, D01, and D09 have been destroyed. Well C01 was destroyed during January of 1972, well D01 during October of 1976, and D09 during April of 1973. The fourth well, C02, is an inactive well located on the Hetch-Hetchy right-of-way just west of Permanente Creek. The well is owned by the San Francisco Water Department. Although the well is

outside of the CIR, its position is ideal to serve as an early warning well that could be used to identify the westward movement of chemicals in the ground water that, although it is very unlikely, could potentially be induced by pumping of Mountain View well Number 17.

A review of the monitoring wells search computer output for township and range coordinate area 06S2W21 indicates that the only monitoring wells within the CIR are those installed as part of the Jasco investigation. The configuration of the Jasco monitoring network is shown on Figure 3.

4. California Department of Transportation/Santa Clara County Planning Department Construction Division

The California Department of Transportation (CALTRANS) was contacted regarding the existence of wells encountered during the construction of Central Expressway. The CALTRANS public affairs office stated that Santa Clara County was responsible for the construction of Central Expressway. A representative of the Santa Clara County Planning Department Construction Division stated that all wells sealed during construction of Central Expressway are recorded by the SCVWD. Further efforts are now being made by WA to locate possible wells sealed during construction of Central Expressway that are not contained within the WID.

In addition, a copy of the Official Map of Santa Clara County prepared in 1902-03 was obtained from the Santa Clara County Planning Department Construction Division. Attempts are now being made to obtain a larger scale map, containing the CIR and surrounding area, prepared during the same time period.

5. California Department of Water Resources (DWR)

The California DWR regulates well construction and destruction within the State of California. Since 1963, the DWR requires that a water well driller's report be submitted for each well drilled which shows the location of the well and also a log of the soil boring. All DWR well drillers

reports for the CIR and surrounding area have been incorporated into the SCVWD WID. The SCVWD and DWR have identical data sets for the CIR and surrounding area.

6. Santa Clara County Health Department

A copy of the Santa Clara County Health Department (SCCHD) private well sampling program final report was obtained to verify if any of the private wells sampled as part of this program were located at or in the vicinity of the CIR. Attempts were made by the SCCHD to sample well D03, located just east of the CIR but the pump was not operable and the attempt was abandoned. No other wells within and in the vicinity of the CIR were sampled as part of the SCCHD investigation.

7. Other Reports and References

A copy of a report, prepared in 1986 for the Clean Water Task Force, entitled "Possible Well Locations: Selected Parts of Santa Clara Valley, California" was obtained from Weiss Associates. The CIR was not contained within any of the study areas canvassed as part of the Clean Water Task Force investigation.

A copy of "Groundwater in the Santa Clara Valley, California", prepared in 1924 by W.O. Clark was obtained on loan from the U.S. Geological Survey. Two wells, numbers 2142, and 2143, were identified within the CIR. Well 2142 has been tentatively identified as State well number 06S2W21G03 and well 2143 as 06S2W21G04. SCVWD records state that both wells were destroyed in 1966.

C. WORK IN PROGRESS

This portion of the preliminary report summarizes work that is still in progress. The results of the work in progress will be summarized in the final report which will be submitted to the CRWQCB no later than May 6, 1988.

As discussed above in Section B.3, five water-producing wells were located within the study area. One of the wells, F01, is Jasco well V-4. Two of the wells, G03 and G04 have been destroyed. In addition, both G03 and G04 are located adjacent to the eastern boundary of the CIR. The last two wells, C#2 and D#1 were identified on aerial photographs by EPA as part of the South Bay Cooperative Agreement well inventory investigation. Potential well C#2 is located near the northwestern corner of the CIR, while D#1 is located near the western boundary of the study area. Both potential wells are located in areas not thought to have been impacted by the Jasco chemical plume. Given the locations of these two potential wells, no further effort will be taken to determine the existence and status of the two potential wells.

From the information gathered thus far, it does not appear that any active or inactive water producing wells (excluding the Jasco well) are located within the CIR. Given this information, there will be no private well sampling performed within the CIR. The closest water-producing well is the inactive well C02 located just east of Permanente Creek. Well C02 is located approximately half-way between the Jasco site and City of Mountain View production well No 17. Given the location of well C02, it could potentially be used as an early warning well to monitor possible westward migration, if any, of the Jasco plume. Contacts will be made within the City of San Francisco Water Department, which owns the well, to see if permission to sample the well can be granted. If permission is granted, the well will be sampled and the ground water sample analyzed using EPA Method 8010. At this time, well C02 is the only well that is to be sampled, outside of the Jasco monitoring network of wells.

As discussed above, the information examined thus far indicates that there are no active or inactive wells within the CIR other than those of the Jasco monitoring network. Therefore, a door to door search of the CIR will not be performed. This decision is also based on the locations of the two destroyed wells and two potential wells not being within or adjacent to the area impacted by the Jasco plume. Both the decision to not perform a door to door survey as well as the decision to sample only well C02 may be

changed if additional wells are found by the investigatory work that is being performed now and will be performed in the upcoming weeks.

In addition to the tasks outlined above, the following tasks will be performed over the next few weeks. The results of this investigatory work will be contained in the final report.

- Further investigation will be performed at the SCVWD to obtain well logs for wells G03 and G04, located within the CIR, and for nearby wells located outside of the CIR. The well log information will be used to develop a better understanding of the stratigraphy of the area surrounding the Jasco site. SCVWD records will also be searched to locate any wells sealed during construction of the Central Expressway. The work performed thus far indicates that no wells were sealed during construction.

- Attempts will be made to obtain a larger scale map of the CIR and adjacent area from the official map of Santa Clara County prepared in 1902-03. This map may supply the locations of old agricultural wells not contained within Clark (1924).

- Contacts will be made with local well drillers to see if they have knowledge of any wells installed within the CIR that were not registered with the State.

- Contacts will be made with local utility companies including the City of Mountain View, PGandE, Pacific Bell, etc. to determine the location and depth of buried utilities. In addition, the San Francisco Water Department will be contacted to obtain information regarding the characteristics of the Hetch-Hetchy Aqueduct right-of-way. After the information is gathered, an assessment will be made as to the potential that the utilities' excavations may serve as preferential horizontal conduits as was discussed in the Potential Conduits Investigation proposal dated December 8, 1987.

- As discussed above, a final report will be prepared outlining the results of the potential conduits investigation. The report will contain detailed discussions of the data collection procedures, results of the data collection, water sampling results and recommendations. The final report will also contain tables outlining the installation, operation and destruction characteristics of the wells identified within the CIR. Lastly, figures will be presented showing the location, location accuracy, and characteristics of wells located within the CIR.

- The results presented in this preliminary report may be changed or modified by new information obtained after the submittal of this report. Any corrections or additions will be outlined in the final report.

D. LIMITATIONS

The data, information, interpretations, and conclusions contained within this report are presented specifically and soley for Bronson, Bronson and McKinnon. The conclusions and professional opinions presented herein were developed by Wahler Associates, in accordance with currently accepted geologic and hydrogeologic principles and practices. Wahler Associates cannot be responsible for any conclusions and recommendations that may be made by others, unless we have been given an opportunity to review such conclusions and concur in writing. This report is a preliminary report, not a final document, limited by the authorized time of preparation, and the fact that reports and other sources of information used in the preparation of this preliminary report were written by parties other than Wahler Associates. The conclusions made are subject to change if additional information becomes available.

TABLE 1

WATER PRODUCING WELLS WITHIN CIR
JASCO CHEMICAL CORPORATION

State Well Number	Location	Local I.D.	Status
06S2W21C#2	70S Hackett Ave./200W Farley St.	--	photo i.d.
06S2W21D#1	150N Central Exway/270E Silverwood Ave.	--	photo i.d.
06S2W21F01	560N Villa St./160E Higdon Ave. Ext.	V-4	active
06S2W21G03	150N Frontage Rd./15W Granada Dr.	2142	destroyed
06S2W21G04	194N Frontage Rd./20W Granada Dr.	2143	destroyed

TABLE 2

MONITORING WELLS WITHIN CIR
JASCO CHEMICAL CORPORATION

State Well Number	Location	Local I.D.	APN
06S2W21C01A	78S Central Exway/473E Higdon Ave.	V-6	154 02 040
06S2W21C02A	Central Exway/18W Beatrice St. Ext.	V-7	150 21 500
06S2W21C03A	490S Wright Ave./350E Bonny St. Ext.	I-2	150 21 500
06S2W21C04A	80S Meridian Way/230E Bonny St.	I-3	150 21 500
06S2W21C05A	51N Central Exway/132E Beatrice St.	V-9	150 21 500
06S2W21F01A	436N Villa St./137E Higdon Ave.	V-3	154 02 001
06S2W21F02A	553N Villa St./127E Higdon Ave.	V-2	154 02 001
06S2W21	427N Villa St./170E Higdon Ave.	V-1	154 02 001
06S2W21F04A	554N Villa St./284E Higdon Ave. Ext.	V-5	154 02 001
06S2W21F05A	150S Higdon Ave./550E Villa St.	I-1	154 02 001
Not available	appx. 300S Central Exway/ 300E Higdon Ave.	V-10	154 02 001
Not available	appx. 60N Central Exway/ 105E Beatrice St.	V-8	154 02 500

APN: Assessors parcel number

ANNOTATED REFERENCES

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

CALTRANS, 1988, Personal communication with Mr. Thatcher, Construction Division.

SANTA CLARA COUNTY (SCC)

SCC, 1902-1903, Official Map of Santa Clara County, revised 1905, 1:25,000.

SCC, 1988, Personal communication with Don Marcott, Surveyor, Planning Department.

SANTA CLARA VALLEY WATER DISTRICT (SCVWD)

SCVWD, 1965, Santa Clara County Flood Control and Water Conservation District (SCCFC WCD), Zone NW-1, Permanente Creek Plan and Profile, sheets 5,6,7,28, and 29.

_____, 1980, Saltwater Intrusion Investigation in the Santa Clara County Baylands Area, California, by Thomas Iwamura, Engineering Geologist, 2nd printing, with minor corrections, December 1984. Publication was examined, but CIR is not included within study area.

_____, 1984, Field notes for Saltwater Intrusion Prevention Project, Sub-areas E & F, in Well Department Publication was examined, but CIR is not included within the study area.

_____, 1985a, Saltwater Intrusion Prevention Project, Bimonthly Progress Report No. 5, Prepared by John H. Clarke, February, 1985. Publication was examined, but CIR is not included within the study area.

_____, 1985b, Saltwater Intrusion Prevention Project, Bimonthly Progress Report No. 7, Prepared by Richard E. Kimmel, July, 1985. Publication was examined, but CIR is not included within the study area.

_____, 1987a, Well Locations Plotted by DWR - State Well Location Numbers - Mountain View, California, 15-minute Quadrangle.

_____, 1987b, South Bay Multi-Site Cooperative Agreement No. 5-130-120-1, Well Inventory, prepared for the California Regional Water Quality Control Board (CRWQCB).

_____, 1988a, Well Inventory, Section 21, Computer Printout, Well Department.

_____, 1988b, Well Inventory, Section 16, Computer Printout, Well Department; examined for CIR not within Section 16.

_____, 1988c, Requested Statistics for Registered Water Producing Wells, Computer Printout, Water Revenue Section.

SCVWD, 1988d, Monitoring Wells Search, Computer Printout, Water Revenue Service.

_____, 1988e, Well Logs for Monitoring Wells, Water Revenue Section.

_____, 1988f, Master Active and Inactive Well Files, Water Revenue Section.

_____, 1988g, Abandoned and destroyed Well Files, Microfiches, Water Revenue Section.

_____, 1988h, Personal communication with Leslie Bejar, SCVWD Well Department.

SANTA CLARA COUNTY HEALTH DEPARTMENT (SCCHDD)

SCCHD, 1986b, Santa Clara County Private Well Sampling Program, Final Report, January, 1986.

_____, 1988, Personal Communication, Ms. Linda Crawford, Senior E.H. Sanitarian SCCHD.

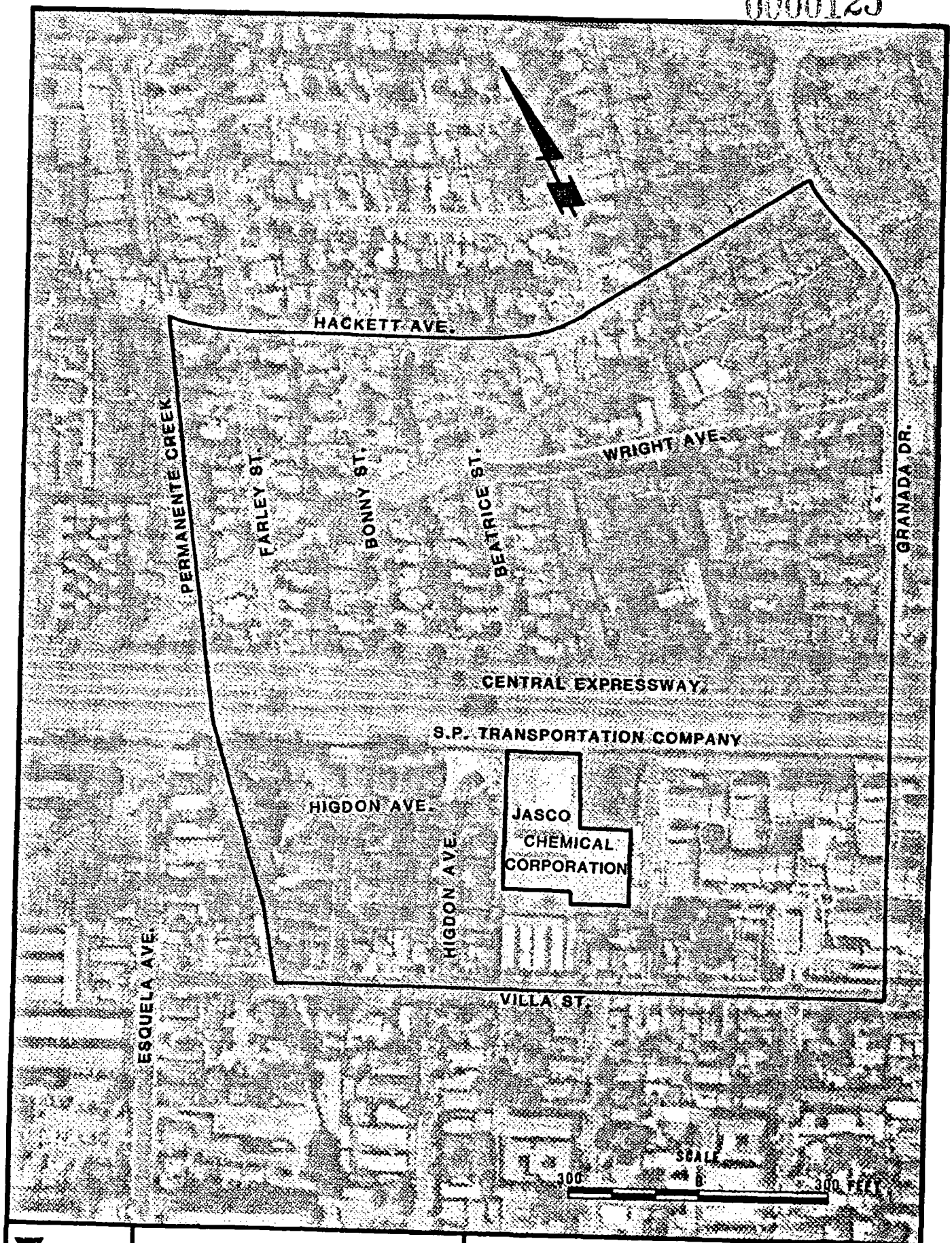
OTHER REPORTS

Aqua Terra Technologies (ATT); (1987), Potential Well Conduits, Permanente Creek to Rengstorff Avenue, Colony Street to Charleston Road, Mountain View, California. Publication was examined, but CIR is not included within the study area.

Clark, W.O.; (1924), Ground Water in the Santa Clara Valley, California, U.S. Geological Survey Water Supply Paper No. 519.

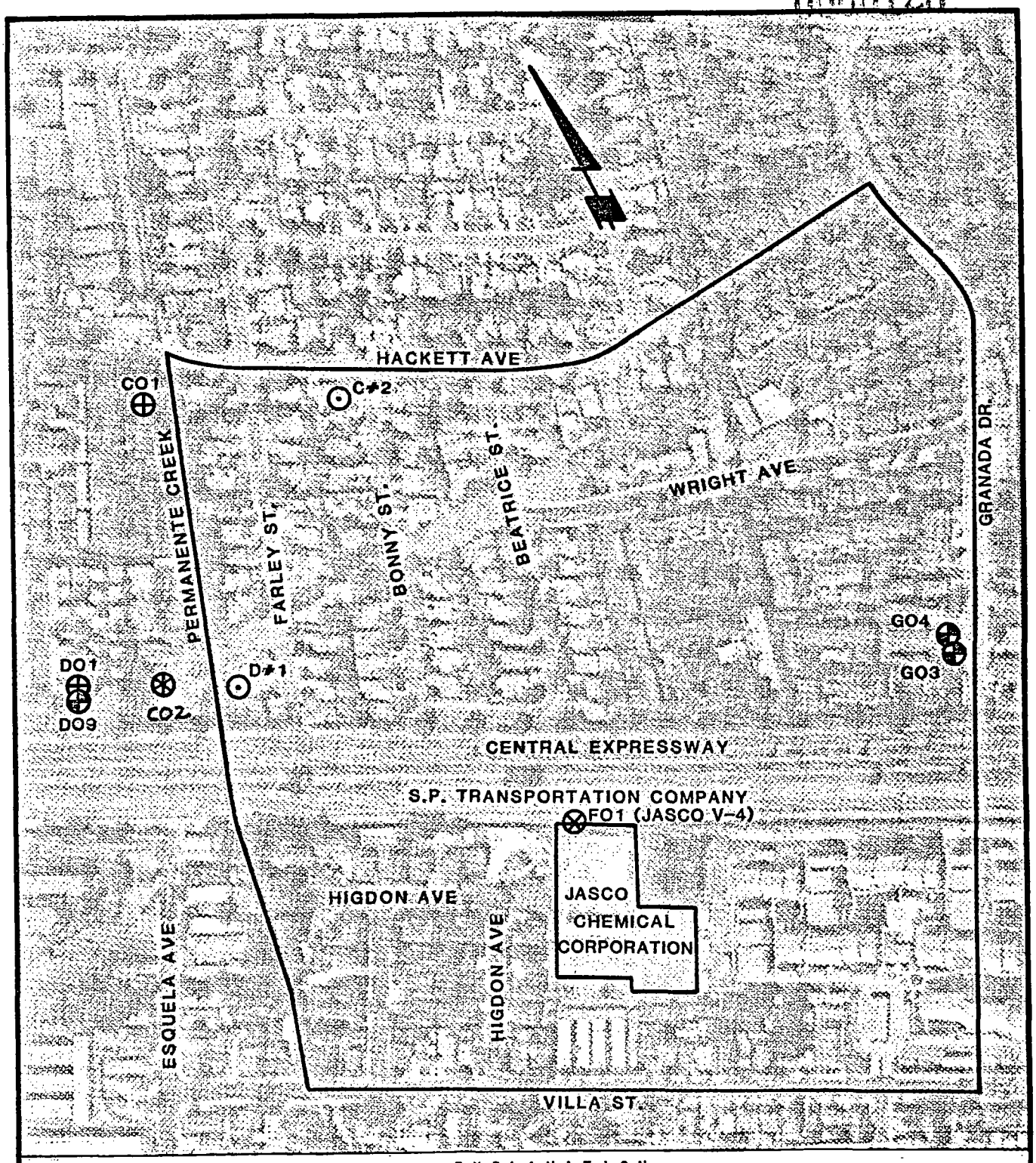
Weiss Associates; (1986), Possible Well Locations Selected Parts of Santa Clara Valley, California, prepared for the Clean Water Task Force. Publication was examined, but CIR not included within the study area.

0000125



Wahler Associates	JASCO CHEMICAL CORPORATION POTENTIAL CONDUIT INVESTIGATION	CONDUIT INVENTORY REGION		
PALO ALTO • CALIFORNIA		PROJECT NO.	DATE	FIGURE NO.
		JCO-104H	MARCH 1988	1

0000125



EXPLANATION

- Conduit inventory region
- Destroyed domestic well
- Well identified by air-photo interpretation
- Active industrial well
- Inactive domestic well
- Destroyed well – use unknown

300 0 300 FEET

Wahler Associates	JASCO CHEMICAL CORPORATION POTENTIAL CONDUIT INVESTIGATION	PRELIMINARY WELL IDENTIFICATION SUMMARY (NOT INCLUDING MONITORING WELLS)		
		PROJECT NO.	DATE	FIGURE NO.
	PALO ALTO • CALIFORNIA	JCO-104H	MARCH 1988	2

Wahler Associates
PALO ALTO • CALIFORNIA
JASCO CHEMICAL CORPORATION
POTENTIAL CONDUIT INVESTIGATION
LOCATION OF EXISTING A AND B1 AQUIFER MONITORING WELLS
PROJECT NO.
JCO-104H
DATE
MARCH 1988
FIGURE NO.
3
EXPLANATION
A – AQUIFER MONITORING WELL
B1 – AQUIFER MONITORING WELL
SCALE
110 0 110 FEET
BONNY ST.
BEATRICE ST.
MERIDIAN WAY
V-9
V-8
CENTRAL EXPRESSWAY
I-3
V-7
I-2
V-6
SOUTHERN PACIFIC RAILROAD
I-1
V-5
V-2
V-4
V-3
V-10
V-1
HIGDON AVE
PERMANENTE AVE
HIGDON AVE
JASCO CHEMICAL CORPORATION